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## NECROLOGY

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### CHARLES MARVIN VORCE OF CLEVELAND, OHIO

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Charles Marvin Vorce was born in Pulaski, N. Y., November 10, 1843.

He possessed a naturally delicate, thoughtful, studious temperament and exceptional literary taste and ability, all of which were increased by exercise and study as long as he lived. To him education was an instinct, a mode of living, a necessary condition of existence, rather than a task to be performed under duress for a limited time and then dropped with a feeling of relief.

His course of life was interrupted by the breaking out of the Civil War, when he, at the age of eighteen years, devoted his life to the country's service from the call for three months' volunteers to the close of the conflict. His vigor was somewhat impaired by the hardships of war—including an attack of typhoid fever.

On January 27, 1868, he married Miss Evalyn C. Marshall, of Oregon, Illinois. He is survived by his widow and two sons aged 31 and 33 years.

As a man, his was a character of the strictest integrity and the highest honor. He was modest to a fault, making claim to only moderate merit and so fearful of seeming to seek notoriety that he would only accept it when forced upon him; which often prevented his being fully understood except by his most intimate friends. But his friendship was limited only by his opportunities. His hospitality was free and cordial, evidently one of his chief pleasures; and in return he keenly appreciated every act of kindness, however small. He was one of those rare and priceless friends, quiet, steadfast, generous, helpful, but never exacting, who, however much they may have been appreciated and rewarded, always leave their friends with a strong wish that they could have had opportunity to show more appreciation and to contribute more to their happiness before it was forever too late.



CHARLES M. VORCE

His education seemed to lean instinctively in the direction of physics and to means and methods of precision, which, in connection with his exceptional literary ability, may well have determined the choice of his profession and of his scientific specialty.

As an attorney he drifted in the direction of mechanics, chemistry, etc., and finally became a very prominent "patent lawyer."

He had distinctly scientific tastes, and was early fascinated with the rapid growth and vast possibilities of microscopy, which he almost unconsciously adopted as his second specialty, to give character and interest to his hours of leisure and periods of rest. His great versatility enabled him at first to gain a considerable familiarity with microscopy as a whole, and to take a wholesome interest in the labors of those who were cultivating its various branches. Such a character was most timely during that formative stage when microscopy was growing from an elegant and admirable recreation and a single specialty in science and art, into the large group of almost boundless specialties that it is now. But as the field outgrew even the superficial vision of any one person, he fixed his attention mainly upon portions of two divisions of the subject.

His work in biology was largely concerned with some of the lower forms, and especially in the direction of pond life, as it was then called. His study and writings, including the two studious and elaborately illustrated papers on the forms observed in the water of Lake Erie, in 1881-2, were pioneer work in the present revival of such studies under the name of limnology, a subject which has since then become the most prominent and important feature, not to say the specialty, of this Society; and it is reasonably hoped that the society may in the near future be fully recognized as the organ of the workers in this new and very important specialty, to the mutual advantage of both parties.

In economic microscopy, on the other hand, he did much of advanced work, mostly in the direction of jurisprudence, where it harmonized to advantage with his regular profession. He applied the microscope to good purpose in the detection of adulterations in food and medicines, of falsification in hand-writing, and in the detection and discrimination of blood stains. He participated in many of the important murder trials that were held in his county during the last quarter-century, and furnished much of the technical testimony that could be obtained only by expert microscopical investiga-

tion. As an expert he was, as ever, careful, thorough, precise, and perfectly candid. He was most skilled in recognizing the facts that were brought within sight by the microscope, and appreciating them at their true value, and applying them accordingly; but he was conservative and just, and incapable of making exaggerated claims or unjust inferences, or of expressing reckless or unwarranted opinions. His position as an expert was inflexibly judicial, and therefore one which the world would be greatly improved by following. His important paper on "Fees of Experts," in 1890, takes a stand in this same spirit. Micrometry, which was often a prominent and sometimes the principal feature in these studies, was one of his favorite departments, in which he greatly excelled. In connection with his studies of handwriting he contrived a special and useful microscope stand for that purpose, which was published in 1891, and which he used for his own work.

Many of his papers on these and similar subjects were introduced at the society meetings, and afterward published in the Proceedings or in other journals.

Every trait in Mr. Vorce's character led him irresistibly to join his friends and associates in their various society enterprises, and qualified him for the highest usefulness therein. He was one of the founders of the Cleveland Microscopical Society, of which he was secretary and afterwards president. He was also a Fellow of the Royal Microscopical Society of London, from 1881.

His most important participation was naturally in our own national body, the American Society of Microscopists, now American Microscopical Society, as the older members will remember with pleasure and gratitude.

He was a member of the National Microscopical Congress held at Indianapolis in August, 1878, where he was at once recognized as one of the leading spirits and one of the safest advisers. He was chairman of the nominating committee for permanent officers of the convention, and a prominent member of the committee on a permanent national organization; these being positions of greatest influence and responsibility in giving origin and character to the American Society of Microscopists. He was Second Vice-President at the first meeting of the fully organized society at Buffalo in 1879, and First Vice-President at the Pittsburg meeting in 1887, and the New York meeting in 1900. It might truly be added that only his

excessive modesty stood between himself and the Presidency; for he was often urged to accept the position, but as he happened to be a member of the nominating committee at the time no reasons or pressure could induce him to allow his name to be mentioned. Generally, however, he was barred from that office by the unwritten law, which was early adopted, that the President for the next meeting should always be chosen from among those present at the time of election, and the fact that his business engagements were so exacting that he could seldom be certain of attending two meetings in succession.

He labored strenuously, from first to last, to assist in building up and holding up the society. He was always a welcome associate, and often a chosen leader in any kind of committee work, where his quiet and unpretentious manners, thoughtful habits, scholarly attainments, and great organizing ability made him both congenial and efficient. Equally faithful was he in all the minor opportunities of membership. He was an early subscriber to the Spencer-Tolles fund for encouraging microscopical research, was as constant an attendant upon the meetings as the emergencies of business would allow, and often at a large sacrifice of profitable engagements. He presented numerous papers of every grade from little notes on useful details in technic to elaborate studies in natural history or economic microscopy in which he was a recognized expert. At the meetings he joined in discussions and his remarks were always practical, suggestive, and helpful. Among the special activities of the society, by which during its early years its members were interested and assisted, were the so-called "working sessions." These will be remembered by the older members as informal afternoon conferences, held during the "eighties" for demonstrations in technic. Mr. Vorce was always ready to contribute a share from his rich experience, presenting such important specialties as micrometry, photomicrography, detection of adulterations, etc. In planning for the Cleveland meeting in 1885, the executive committee requested him to take charge of that department. He accepted the very onerous duty and executed it with his usual thoroughness and good judgment. He prepared in advance a carefully considered scheme to make the best use of the available resources and engaged the participation of members able to contribute from their own specialties. Notwithstanding the inevitable disappoint-

ments from the inability of members to keep their engagements, demonstrations were given at thirty-eight tables, two of which were occupied with his own instructive illustrations in practical micrometry; and it is no injustice to other sessions, several of which were excellent, to call this the most complete and successful of the series. So highly was this instructive work appreciated that a resolution was enthusiastically offered, though evidently impracticable, that all the afternoons of the meetings be reserved for such work.

Mr. Vorce was always ready to do more than his share, both as an exhibitor and in committee, of the somewhat similar though more popular work at the various soirees, receptions, and exhibitions that were given from time to time.

At some of the earliest meetings an attempt was also made to stimulate the interest of the less active or experienced members by offering prizes for competition. The first prize was an objective offered by Mr. E. H. Griffith for the best mounts showing the application of the microscope to the detection of adulterations in food. At the Detroit meeting in 1880 it was awarded to an anonymous contributor, who proved to be Mr. Vorce, he having offered some of his ordinary work in that field, merely to assist in the enterprise by his participation, and without a thought of being a winner and thereby standing in the way of others. So disappointed was he at the result that he instantly insisted on presenting the prize to the society for further competition. His refusal to accept the prize was positive and evidently intended to be final; and only after the prize was duplicated by the offer of a like one for the next year could his friends induce him to accept the first as a compliment to himself.

At the Cleveland meeting in 1885 came the opportunity to entertain the Society in his own town, and he devoted himself to the work with a love and an aptness that was boundless. From the official address of welcome which it was his duty to give the arriving guests, till the closing vote of thanks to himself personally which was enthusiastically passed as the last act of an exceptionally delightful meeting, he was the virtual and recognized leader as well as the most tireless worker among the local entertainers. During more recent years his increasing business as a "patent lawyer" required long absences from home, or devotion to work in absorbing cases,

in a manner that interfered with his scientific work, and especially with attendance at the summer meetings. He however retained his interest throughout. It is noticeable that his last paper was an excellent obituary of his distinguished friend, and ours, the late Hon. J. D. Cox, for the 1900 meeting at New York.

Intimately connected with the American Microscopical Society, though independent in its inception, the National Committee on Micrometry was formed, on the initiative of the Troy Scientific Association. President F. A. P. Barnard of Columbia College, perhaps the leading theoretical metrologist of the world at that time, was chairman; and each of the societies connected with the Microscopical Congress was represented by a member on the committee. Mr. Vorce ably represented the Cleveland Microscopical Society. In this work he was in his native element. Everything that he could do was evidently a labor of love and a personal delight. During the period of the committee's activity his constant and untiring participation was a model of thoughtful, discreet, generous, and altogether successful committee work.

At the next meeting of the American Microscopical Society the committee was recognized by that body and authorized to continue as its representative. It was easy to decide on the metric system and the 0.001 mm. unit; but it required the work of years to be able to apply that unit, or any other one, to micrometry with any known degree of precision. The commercial micrometers in universal use were of as much authority as the carpenter's pocket rule, with no means of knowing which was the farthest wrong, or how much wrong was the nearest right.

Finally, with the cordial coöperation of Professor J. E. Hilgard, of the U. S. Bureau of Weights and Measures, an exquisitely ruled centimeter on a platino-iridium bar was obtained; and its actual relations to the standard meter of the U. S. Coast Survey and to several other meters of known value, and through them to the "Metre of the Archives" which had been adopted in 1870 by thirteen governments as the international standard, was obtained. Its subdivisions were studied at great length by Professor Wm. A. Rogers, then easily first in experience, skill, and success in such work, and by others of known aptness and experience, including Mr. Vorce. The precise relations of the various spaces to each other and to the standard meter were determined, so far as the microscope was able



to reveal them. Probably no centimeter of metal or of anything else has ever received as much, or a small fraction of as much, of high-class work as this. The plate was adopted as a national standard by the A. M. S. and so-called copies (having known degrees of correspondence with the standard) were prepared for use in testing and correcting the micrometers employed in actual work. As a result it is now possible to know the value of a working micrometer, with a definiteness and certainty unattempted before.

Mr. Vorce was also one of the organizers of the American Postal Microscopical Club. His altruistic spirit responded instantly and cordially to the idea of a correspondence society, not selfishly limited to a few experts or professionals who least of all needed encouragement or assistance, but open to all really qualified to participate profitably, where all could take an interest in the work of others along lines different from their own, and where those able to lead and teach could see exactly where their friendly words and helpful hints would be most useful. He was a manager for twenty years, from the foundation of the Club in 1875 to 1895, and Vice-President since that time. He soon organized a local circuit in his own town, and by his personal care made it for many years one of the strongest and best branches of the enterprise. There was nothing narrow-minded, selfish, or provincial in his principles, his interests, or his acts. A thorough cosmopolitan and a microscopist of the old school, like Quekett, and Beale, and Carpenter, and many others that might be mentioned, he cultivated and cherished microscopy in its broadest sense, both as a science and as an art. He was always ready to contribute facts or ideas from his own special lines to those working in other fields, and to take an appreciative interest in their own special undertakings; but he was pleased most of all to give friendly hints, needed information, and suggestive criticism to amateurs or beginners who were trying to enlarge their sphere of vision. In contributing to the circulating boxes, he always made a serious business of furnishing something having definite purpose connected with it, and in writing something worth reading about it. His circulating notes were models of general excellence and fitness for the purpose; being thoroughly accurate and scientific, but in conversational and readable style, free from needless technicalities of expression or ostentation of any kind, carefully, neatly, and closely written with fine pointed pen and suitable ink, giving a great deal

on a page but extremely legible and without appearance of crowding, and often accompanied with neat and illuminating pen drawings. He often added voluntarily to inadequately described slides from other contributors, not only casual remarks of importance but elaborate and carefully studied notes when required to make them useful. The Secretary knew him as one who, even in his busiest years, could be depended upon to write, on request, scholarly and instructive notes for difficult slides within his range of study. He will be greatly missed by his friends in the Club, and scarcely less by those members who knew him only by name as a very helpful educator. It is a singular coincidence that Mr. Vorce died almost at the same time as his neighbor and intimate friend, and long-time associate in microscopy and in the Club, Mr. L. A. Willson. Hearing of Mr. Vorce's death, the Secretary wrote to Mr. Willson asking for some information and assistance, only to receive from strange hands information that Mr. Willson had died three days before his friend.

Besides the records of his society work which found their way into the microscopical journals he was a frequent contributor of anything likely to be of use from the simplest hints in the technic of obtaining, examining, and mounting objects, to formal and thoroughly prepared papers along the lines which most attracted his attention. Not only were his contributions always more than welcome in all the American journals, but they were also appreciated abroad. They were often represented by reprints, extracts, abstracts, or references in the *Journal of the Royal Microscopical Society*, the unquestioned standard in microscopy, at least of the English-speaking world, in every volume of which, during the years of his greatest activity, they found place, often to the extent of several times a year.

Mr. Vorce's death was as remarkable as his life. On the morning of December 18, 1901, he started, well and happy, for his office, but telephoned that he would stop on the way to do some shopping. He entered one of the great department stores, made his way slowly through the holiday throng that crowded the aisles, and was quietly selecting Christmas gifts for his friends, when, without warning, he fell in a faint to the floor. But the rest that came so suddenly was eternal. His long overtaxed system had reached its limit. The gentle, courteous associate, the considerate and beloved friend, the eminently useful, modestly great man had finished his work.

R. H. WARD.